

CASE NO.: ARC9-2000-0063-US1  
Serial No.: 09/609,809  
April 8, 2005  
Page 2

PATENT  
Filed: July 3, 2000

1-5 (canceled).

6. (currently amended) A computer program device, comprising:

a computer ~~program storage device~~ readable medium including a program of instructions usable by an encryption computer, comprising:

logic means for chaining a data block to a plain text version of an adjacent block in the stream to render a chained block;

logic means for scrambling the chained block using a first round of a cipher to render a scrambled block; and

logic means for iterating the means for scrambling and chaining using subsequent rounds of the cipher.

7. (original) The computer program device of Claim 6, wherein the means for iterating iterates forward and backward through the stream, using successive rounds of the cipher.

8. (currently amended) A computer system for encrypting a stream of data blocks, comprising a processor programmed to execute method acts including:

(a) receiving a sequence of N blocks;

(b) initializing a previous block variable B;

(c) for  $i=1$  to N, executing a DO loop comprising:

(c)(1) XORing an ith block with B to render a modified ith block;

(c)(2) setting B equal to the modified ith block;

1053-99.AM4

CASE NO.: ARC9-2000-0063-US1  
Serial No.: 09/609,809  
April 8, 2005  
Page 3

PATENT  
Filed: July 3, 2000

(c)(3) scrambling the modified ith block using at least one round of a cipher;  
(c)(4) incrementing "i" by unity and returning to act (c)(1);  
(d) initializing a previous block variable B;  
(e) for i=N to 1, executing a DO loop comprising:  
(e)(1) XORing an ith block with B, yielding a modified ith block;  
(e)(2) setting B to the modified ith block;  
(e)(3) scrambling the modified ith block using at least one next round of a cipher;  
(e)(4) decrementing "i" by unity and returning to act (c)(1); and  
(f) determining whether a predetermined number of iterations have been executed,  
and if not, returning to act ((b)(c)) using a next round of the cipher, otherwise outputting an  
encrypted stream of data blocks.

9. (original) The computer system of Claim 8, wherein the stream of data blocks is established  
by a computer program.

10. (original) The computer system of Claim 9, wherein a respective round of the cipher is used  
for each iteration.

11. (original) A method for generating a tamper resistant version of a software program including  
a stream of data blocks, comprising:  
providing a cipher defining rounds;

1053-99.AM4

**CASE NO.: ARC9-2000-0063-US1****Serial No.: 09/609,809****April 8, 2005****Page 4****PATENT**  
**Filed: July 3, 2000**

iterating through the rounds of the cipher by iterating through respective outer loops of forward plain text chaining followed by backward plain text chaining; and

during each forward portion of an outer loop, applying a respective round of the cipher to each block, and during each backward portion of an outer loop, applying a respective round of the cipher to each block.

12. (currently amended) The method of Claim 11, further comprising:

(a) receiving a sequence of N blocks;

(b) initializing a previous block variable B;

(c) for  $i=1$  to N, executing a DO loop comprising:

(c)(1) XORing an ith block with B to render a modified ith block;

(c)(2) setting B equal to the modified ith block;

(c)(3) scrambling the modified ith block using at least one round of a cipher;

(c)(4) incrementing "i" by unity and returning to act (c)(1);

(d) initializing a previous block variable B;

(e) for  $i=N$  to 1, executing a DO loop comprising:

(e)(1) XORing an ith block with B, yielding a modified ith block;

(e)(2) setting B to the modified ith block;

(e)(3) scrambling the modified ith block using at least one next round of a cipher;

(e)(4) decrementing "i" by unity and returning to act (c)(1); and

1013.99.AM4

CASE NO.: ARC9-2000-0063-US1  
Serial No.: 09/609,809  
April 8, 2005  
Page 5

PATENT  
Filed: July 3, 2000

(f) determining whether a predetermined number of iterations have been executed, and if not, returning to act (b)(c1) using a next round of the cipher, otherwise outputting an encrypted stream of data blocks.

13, 14 (canceled).

15. (original) A computer system for decrypting a stream of data blocks, comprising a processor programmed to execute method acts including:

- (a) receiving a sequence of N blocks;
- (b) for  $i = N$  to 1, executing a DO loop comprising:
  - (b)(1) reverse XORing an  $i^{\text{th}}$  block with a  $\text{block}_{i+1}$ ;
  - (b)(2) unscrambling the  $i^{\text{th}}$  block using a round of a cipher to render an unscrambled block;
  - (b)(3) determining whether a  $\text{block}_{i+1}$  exists, and if not, proceeding to act (c), otherwise;
  - (b)(4) decrementing "i" by unity and returning to act (b)(1);
- (c) for  $i = 1$  to N, executing a DO loop comprising:
  - (c)(1) reverse XORing an  $i^{\text{th}}$  block with a  $\text{block}_{i+1}$ ;
  - (c)(2) unscrambling the  $i^{\text{th}}$  block using a single round of a cipher to render an unscrambled block;

1053-99.AM4

CASE NO.: ARC9-2000-0063-US1  
Serial No.: 09/609,809  
April 8, 2005  
Page 6

PATENT  
Filed: July 3, 2000

(c)(3) determining whether a block<sub>i+1</sub> exists, and if not, proceeding to act (d), otherwise;

(c)(4) incrementing "i" by unity and returning to act (c)(1);

(d) determining whether a predetermined number of iterations have been executed, and if not, returning to act (b) using a next round of the cipher, otherwise outputting a decrypted stream of data blocks.

16. (original) The computer system of Claim 15, wherein the stream of data blocks is established by a computer program.

17. (original) The computer system of Claim 16, wherein a respective round of the cipher is used for each iteration.

1053-99.AM4